REMARKS/ARGUMENTS

Rejection of claims 1-9 under 35 U.S.C. 102(b) as being anticipated by Satya et al., U.S. Patent 6,445,199 B1.

1. Rejection of claim 1:

Pertaining to claim 1, Satya teaches a method for defect review comprising following steps:

Providing a wafer with a plurality of defects;

Performing a defect inspection to detect the defect; performing an automatic defect classification according to a database to separate the defects into a plurality of defect types; and performing a defect review;

wherein each defect type has different sampling ratios in the defect review according to its influence degree of process yield (see column 7, lines 14-48).

Response:

According to claim 1, the present application method contains the following characteristics: (1) performing an *automatic defect classification according to a database to separate the defects from a first inspection into a plurality of defect types*; and (2) *performing at least a second defect inspection (defect review) for each defect type with different sampling ratios* according to the influence degree of process yield of each defect type. In other words, the function of the database of the claimed application is to provide a criterion for the defects classification and then for adjusting the sampling ratio in the defect review according to the defect's influence degree to the process yield.

In the light of U.S. Pat. No. 6,445,199, Satya et al. provide a inspection system which can operate in several mode such as array, die-to-die and die-to-database, wherein the database is a source of the signal that is equivalent to the expected die format. And according to the column 7, lines 14-48 of Satya et al., the significant benefits are achieved by scanning with a continuously moving stage. That is, measurements of the sample are obtained while the stage (or beam) is moving.

Particularly speaking, the function of the database in the Satya et al.'s teaching is a source of the signal that is equivalent to the expected die format. A signal from one die derived from the electron microscope is compared with a signal that is derived from the database. *The database may include design data that is used to make the die and to generate a plurality of perfect images of how the die would appear without any defects.* (column 5, lines 57-62), and is different from the database of claim 1 of the present application that contains pluralities of defect types. Obviously the functions and the spirits between the two databases are distinct.

Accordingly, Satya et al. never teach the same function of the database nor performing a second defect inspection for each defect type with different sampling ratios according to the influence degree of process yield. Sequentially, the application of Satya et al. is quite different from the present application and do not disclose all limitations in claim 1 of the present application. Therefore reconsideration of claim 1 is politely requested.

2. Rejection of claim 2:

Pertaining to claim 2, Satya teaches the method of claim 1 wherein the database comprises information about the plurality of defect types and defect information corresponding to each defect type (see FIG. 3).

Response:

FIG. 3 of '199 is a flowchart illustrating a process and test procedure in according with one of the embodiments of Satya et al.'s teaching. As shown in FIG. 3, a sequence of initial manufacturing process steps are performed and an electron beam inspection is performed. The detected signals are processed to determine whether the inspected subject such as a substrate has defects or not. The detected defect is classified and analyzed and the resulting data can be used to eliminate defect-causing process conditions. And if it shows nondestructive, the substrate can be returned to the process line for further processing. (column 8, lines 24-36 and column 9, lines 8-14). According to '199 patent, the defects are classified into two categories: destructive, used to eliminate the defect-causing process conditions, and nondestructive, which will return the detected subject to the process line for further processing.

However, claim 2 of the presented application recites a plurality of defect types for a complicated semiconductor manufacturing process. The defect classified into a plurality of defect types is not for determining whether a detected subject should be returned to the process line or not, but for being reviewed afterwards. Applicant asserts that reciting the plurality of defect types and the information corresponding to each defect type serves to emphasize the advantageous characteristic of the invention and distinguish it from the prior art. Therefore, reconsideration of claim 2 is respectfully requested.

3. Rejection of claim 3:

Pertaining to claim 3, Satya teaches the method of claim 2 wherein the defect information comprises the influence degree of the process yield of each defect type.

Response:

Claim 3 depends on claim 2, and should be allowed if claim 2 is found allowable.

4. Rejection of claim 4:

Pertaining to claim 4, Satya teaches the method of claim 3, wherein the database separates the defect types into killer defects and non-killer defects according to the influence degree of the process yield (column 31, lines 3-14).

Response:

Claim 4 depends on claim 3, and should be allowed if claim 3 is found allowable.

5. Rejection of claim 5:

Pertaining to claim 5, Satya teaches the method of claim 4 wherein the sampling ratio of the killer defects in the defect review is larger than that of non-killer defects (column 31, lines 25-51).

Response:

In claim 5 of the present application, killer defects that are influent to the process yield are determined to have larger sampling ratio than that of non-killer defects in a defect review, so that the capture of the killer defects is maximized.

According to Satya's teaching, the voltage contrast testing is utilized to optimize other test devices. For a particular type of fabrication process will typically have a particular defect footprint, a processor may be utilized to efficiently compare the data maps to signature patterns and to identify a particular defective manufacturing process. The voltage contrast data may also be utilized in conjunction with optical data to determine which manufacturing process to inspect so that the capture of killer defects is maximized (column 31, lines 25-51). Therefore, *Satya et al. only teach utilizing optical data with voltage contrast data to determine which* ***manufacturing process*** *is defective or which process needs to be inspected but not mention to perform a defect review for a killer defect with a sampling ratio larger than a sampling ratio of a non-killer defect in a defect review.*

Accordingly, the applicant believes there is distinction between the prior are and the present application. Therefore reconsideration of claims 5 is politely requested. Furthermore, claim 5 depends on claim 4, and should be allowed if claim 4 is found allowable.

6. **Rejection of claim 6:**

Pertaining to claim 6, Satya teaches the method of claim 3 wherein the database

separates the defects into pre-layer defects and adding defects, and further separates the adding defects into killer defects and non-killer defects (see column 31).

Response:

Claim 6 depends on claim 3, and should be allowed if claim 3 is found allowable.

7. **Rejection of claim 7:**

Pertaining to claim 7, Satya teaches the method of claim 6 wherein the defect review focuses on the adding defects.

Response:

Claim 7 depends on claim 6, and should be allowed if claim 6 is found allowable.

8. **Rejection of claim 8:**

Pertaining to claim 8, Satya teaches the method of claim 1 wherein after finishing the defect inspection, a judgment of cluster defects is performed and a defect review with a high sampling ratio is performed on the cluster defects if the cluster defects exist.

Response:

From the applicant's paragraph [0023], engineers can manually adjust the sampling ratios according to any special features or excursion cases such as cluster defect observed in the defect inspection then perform a defect review with high sampling ratio of the cluster defect, which is often found in the corner of the semiconductor wafer. Applicant has no way to find such characteristic from '199 patent and asserts that reciting judgment of cluster defects and defect review with a high sampling ratio on the cluster defects emphasize the advantageous characteristic of the invention and distinguish it from the prior art.

9. **Rejection of claim 9:**

Pertaining to claim 9, Satya teaches the method of claim 1 wherein the database is updated according to the result of the defect review after finishing the defect review.

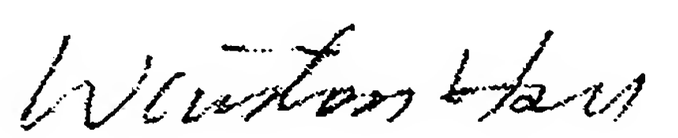
Response:

According to the column14, line 65 to column 15, line 7 of '199 patent, the generated perfect image and/or set of predetermined intensity values or truth tables in database, along with the corresponding test structures, may also be provided to the customer so that they may easily inspect the corresponding test structure..... However, the die-to-database, die-to-perfect image, and die-to-truth-table techniques represent a more efficient inspection procedure since a perfect die or die portion does not have to be found for comparison to the die under test. Accordingly the database in '199 patent serves as a source of the signal that is equivalent to the expected die format and is fixed to a particular inspection.

However, the database provided by the claimed application is updated according to the result of the defect review after finishing the defect review. Then the automatic defect classification and the defect review can rework to get an optimized result for improving the sensitivity and accuracy of the defect root cause analysis. Applicant asserts that reciting the update function serves to emphasize the advantageous characteristic of the invention and distinguish it from the prior art. And claim 9 depends on claim 1, and should be allowed if claim 1 is found allowable.

The applicant believes that all of the claims 1-9 now particularly point out and distinctly claim the subject matter that the applicant regards as the invention. Reconsideration of claims 1-9 is respectfully requested.

Sincerely yours,



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